THIRD ANNUAL JOINT SERVICE POLLUTION PREVENTION CONFERENCE & EXHIBITION

RECYCLING, IT'S STILL THE ONE!

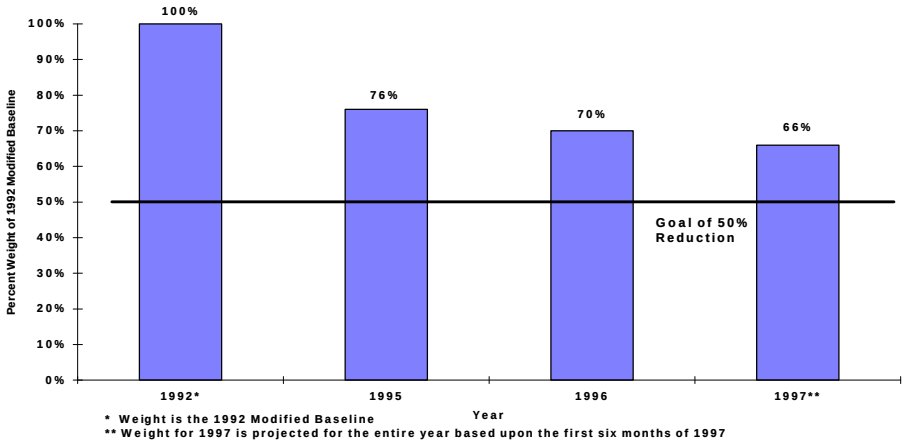
Ms. Gail E. Saxton, P.E.
Parsons Engineering Science, Inc.
1700 Broadway, Suite 900
Denver, Colorado 80290
(303) 831-8100
gail_saxton@parsons.com

Ms. Deborah A. Anderson, P.E.
deborah_anderson@parsons.com

Mr. Robert Alexander
F.E. Warren AFB
90 CES/CEVC
300 Vesle Drive, Suite 600
F.E.Warren AFB, Wyoming 82005
(303) 773-5493
alexander.robert@fewarren.af.mil

In early 1997, a solid waste management plan (SWMP) was undertaken at F.E. Warren AFB to attain compliance with AFPD 17-4, Pollution Prevention Plan of Action, calling for a 50-percent reduction in municipal solid waste disposal from a 1992 baseline. In 1994, a comprehensive solid waste opportunity assessment (OA) (including lots of dumpster diving, adequate to perform a statistically valid analysis) had been performed. Recommendations were made and implemented, however, the base had thus-far only achieved a recorded 30-precent reduction and expected to reach a 34% reduction by the end of 1997 as shown in Figure 1. However, this still fell short of the goal of 50% reduction by the end of 1997.

FIGURE 1
TREND OF THE REDUCTION OF SOLID WASTE FROM 1992 THROUGH 1997



RECYCLING IS STILL THE ONE (Continued)

Parsons Engineering Science, Inc. (Parsons ES) was contracted to prepare a SWMP for F.E. Warren Air Force Base (AFB) (the Base) under Contract Number F41624-94-D-8136, Delivery Order Number 0062, between the Air Force Center for Environmental Excellence and Parsons ES. The purpose of preparing the SWMP was to ensure compliance with federal and state solid waste (SW) requirements and to bring F.E. Warren AFB into compliance with Air Force Instruction (AFI) 32-7042. This instruction mandates that each installation have a solid waste management program. The SWMP prepared was the first step in fulfilling the requirements of the program by addressing SW handling, storage, and collection; disposal; recordkeeping and reporting; and pollution prevention (P2).

Parsons ES performed a limited validation study (including limited dumpster diving) of the solid waste stream, looking specifically for recyclable materials which escaped the recycling bins (and jumped into the trash). Figure 2 shows the results of the limited dumpster diving for the combined industrial and residential solid waste streams. The total weight of the combined solid waste for 1996 was 4.5 million pounds of waste. Industrial solid waste makes up 60% or 2.7 million pounds of that, and the industrial solid waste distribution by category is shown in Figure 3. Residential solid waste makes up 40% or 1.8 million pounds of the solid waste stream. Figure 4 shows its component distribution.

Figure 2
Waste Components in the Combined Solid Waste Stream

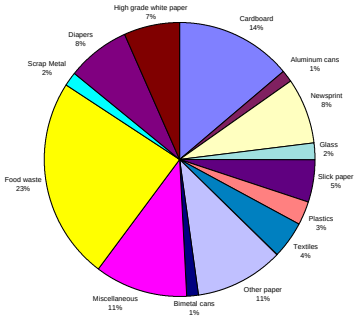


Figure 3
Industrial

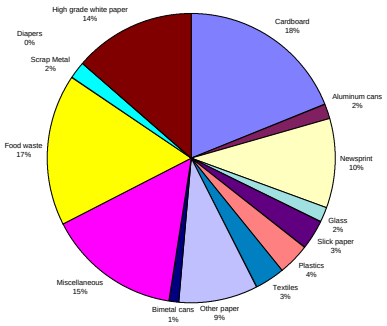
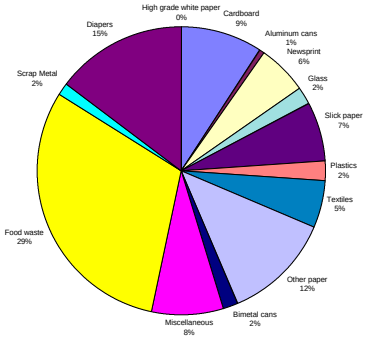


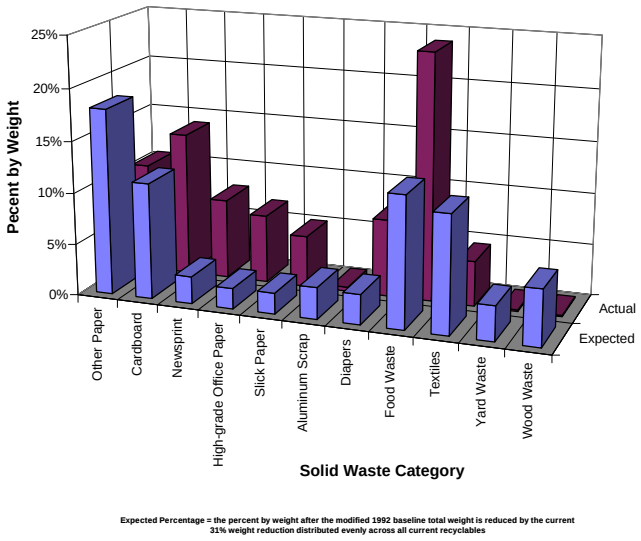
Figure 4
Residential



RECYCLING IS STILL THE ONE (Continued)

Following the solid waste characterization, a projection of what the recycled components should look like was performed. The "Expected" line in Figure 5 shows what the projected volume by weight of recyclables and other waste components should look like, based on the 31% reduction achieved to date. In other words, the data from the 1992 baseline were normalized and assumed that all reductions came from recycling. Then the data were compared to what was actually found. This comparison is shown on Figure 5. Some recyclables percentages had gone up, such as cardboard, newsprint, and office paper. The good news: Composting activities instituted almost a year previously, in September 1996, at F.E. Warren had captured 99 percent or more of the compostable materials, such as grass clippings, wood, and horse manure (it was a cavalry fort once - the legacy lives on!).

Figure 5
Comparison of Actual and Expected Percentages by Weight of the Combined Solid Waste Stream



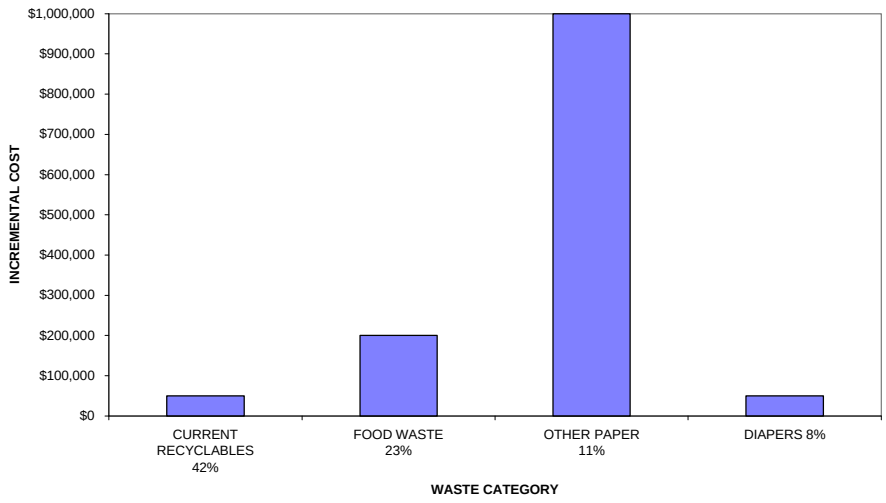
Expected Percentage = the percent by weight after the modified 1992 baseline total weight is reduced by the current 31% weight reduction distributed evenly across all current recyclables

Parsons ES focused on the four largest solid waste sectors: recyclables (42%, including cardboard, high grade paper, aluminum, metals, glass, and plastic), food waste (23%), other paper (11%), and diapers (8%), for their reduction potential. An analysis of reduction choices was performed. The reduction choices were evaluated for economics and practicality. Practicality included both objective and subjective parameters such as logistics, storage challenges, animal vectors, convenience, and likelihood of participation. The results of the economic analysis are show in Figure 6. There is also a direct correlation between convenience and the likelihood of participation. Although we did not take adequate samples to statistically prove this, it appeared that participation in areas where there was curbside pickup was higher than those areas with recycling centers. The conclusion of the analysis: RECYCLING IS

RECYCLING IS STILL THE ONE (Continued)

STILL THE ONE!

FIGURE 6
INCREMENTAL COST OF ADDING REDUCTION PROGRAMS BY CATEGORY



Recommendations to decrease SW disposal to meet the 50-percent reduction goal are to continue and improve the current recycling and composting efforts. Parsons ES recommended making recycling more convenient in industrial/commercial and residential areas, and provide more education to Base personnel to capture an additional 75 percent of the recyclable materials now found in the SW stream. Also, operation of the composting facility should continue because it has reduced the amount of yard waste and wood waste to negligible amounts.

The Results: Since the time of this study, F.E. Warren AFB has implemented numerous recycling communication programs, including presentations to the environmental leadership council, creating a web page, publishing reminders in the base newspaper, and distributing recycling bins and bags throughout the base. By rejuvenating the recycling program, F.E. Warren AFB will achieve its solid waste reduction goals.